



## Shell Oil Products US

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May 18, 2010

Director, Air Enforcement Division  
Office of Regulatory Enforcement  
U.S. Environmental Protection Agency, Mail Code 2242-A  
1200 Pennsylvania Avenue, N.W.  
Washington, D.C. 20460-0001

Subject: *United States v Equilon Enterprises, LLC*  
Civil Action Number H-01-0978  
Southern District of Texas entered August 21, 2001

Flaring Incident Report – April 30, 2010  
Shell Oil Products US, Puget Sound Refinery

Dear Sir or Madam:

Pursuant to Section VIII, Paragraph 136 of the consent decree in *United States v Equilon Enterprises LLC*, Civil Action Number H-01-0978, entered August 21, 2001 by the United States District Court for the Southern District of Texas, Shell Oil Products US submits the following information regarding a Hydrocarbon Flaring Incident, as defined in Paragraph 120(f), that occurred at the Puget Sound Refinery. The flaring incident was investigated and a detailed report listing the root causes is included in the attached Flaring Incident Report.

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and that I have made a diligent inquiry of those individuals immediately responsible for obtaining the information and that to the best of my knowledge and belief, the information submitted herewith is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

If you have any comments or questions regarding this information, please contact Tim Figgie at (360) 293-1525.

Sincerely,

Susan G. Krienen  
General Manager

Enclosure

PSR0000505

cc (w/enclosures):

Director, Air Enforcement Division  
U.S. Environmental Protection Agency  
c/o Matrix Environmental & Geotechnical Services  
120 Eagle Rock Avenue, Suite 207  
East Hanover, NJ 07936

Director  
NWCAA  
1600 South 2nd Street  
Mount Vernon, WA 98273

John Keenan  
Office of Air Quality (OAQ-107)  
US EPA – Region 10  
1200 Sixth Avenue  
Seattle, WA 98101

## FLARING INCIDENT REPORT

Type of Incident: ☐ Acid Gas / SWSG ☐ Tail Gas ☒ Hydrocarbon

### Brief Description of Incident:

On April 30, 2010 at about 10:15 AM the H<sub>2</sub>S in fuel gas alarmed on the FCCU Operator board. At about the same time FCCU Operators received another alarm for flooding of the deethanizer tower as well as high vapor flow from the deethanizer tower to the amine absorber tower, 4BC30. The deethanizer tower flooding was caused by a failed instrument 4AI102 that determines feed quality to the POLY unit. When this analyzer malfunctioned the automatic control system added heat to the deethanizer tower, resulting in flooding and high gas flow to 4BC30. The high gas flow to 4BC30 caused poor performance of the H<sub>2</sub>S absorber tower resulting in high H<sub>2</sub>S in the plant fuel gas, HTU1 fuel gas and cogen fuel gas systems. When the cogen operators saw the high SO<sub>2</sub> in the stack analyzers they shut off plant gas flow to the cogen. This back pressured the plant fuel gas system resulting in flaring of sour fuel gas in excess of 500 lbs.

To correct the problem Operators removed heat from the deethanizer tower, increased the amine circulation to the amine absorber tower 4BC30, and added heat to the amine recovery unit #3 to improve amine quality. To prevent a reoccurrence of this event, process control engineers added a protective function that will alarm Operators in response to a failure of analyzer 4AI102.

AAG was not flared during this event and the 1000-ppm SO<sub>2</sub> corrected to 7% O<sub>2</sub> 1-hour average limit was not exceeded.

<b>Incident Start Date:</b>	4/30/10	<b>Incident Start Time:</b>	11:45 am
<b>Incident End Date:</b>	4/30/10	<b>Incident End Time:</b>	12:20 pm

<b>Estimated Sulfur Dioxide Emissions:</b> (Attach below):	624	<b>Pounds</b>
SO <sub>2</sub> lbs/hr = 0.995*(flare gas flow, MSCFH * 1000) * (Sulfur, vol% / 100) * (64.0648/379), where 0.995 is flare efficiency, 64 #/#-mole is the MW of SO <sub>2</sub> and 379 is scf/#-mole		

### Steps taken to limit the duration and/or quantity of sulfur dioxide emissions:

The flare gas recovery unit was operating to recover as much material as possible during this event and operations worked to control the upset as soon as practicable.

### ANALYSIS OF INCIDENT AND CORRECTIVE ACTIONS

No additional information attached

#### Primary and contributing causes of incident:

The root cause of this event was a failed process control analyzer on the Poly unit feed stream. To correct the problem Operators removed heat from the deethanizer tower, increased the amine circulation to the amine absorber tower 4BC30, and added heat to the amine recovery unit #3 to improve amine quality. To prevent a reoccurrence of this event, process control engineers added a protective function that will alarm Operators in response to a failure of analyzer 4AI102.

**Analyses of measures available to reduce likelihood of recurrence (evaluate possible design, operational, and maintenance changes; discuss alternatives, probable effectiveness, and cost; determine if an outside consultant should be retained to assist with analyses):**

To prevent a reoccurrence of this event, process control engineers added a protective function that will alarm Operators in response to a failure of analyzer 4AI102.

Description of corrective action to be taken (include commencement and completion dates):  
See above.

If correction not required, explain basis for conclusion:

The incident was the result of or resulted in the following (check all that apply):

- ☐ Error from careless operation
- ☐ Equipment failure due to failure to operate and maintain in accordance with good engineering practice
- ☒ Sulfur dioxide emissions greater than 20 #/hr continuously for three or more consecutive hours
- ☐ Caused the number of Acid Gas or Tail Gas incidents in a rolling twelve-month period to exceed five
- ☐ None of the above

Was the root cause identified as a process problem isolated within an SRP?

- ☐ Yes (An optimization study of the affected SRP is required as part of the corrective actions identified above.)
- ☒ No

The root cause of the incident was:

- ☒ Identified for the first time since March 21, 2001
- ☐ Identified as a recurrence since March 21, 2001 (explain previous incident(s) below)

Was the root cause of the incident a malfunction?

- ☒ Yes (describe below)
- ☐ No

The root cause of this event was a failed process control analyzer on the Poly unit feed stream.

**Definition of Malfunction:** Any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or failure of a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

#### **REPORTING REQUIREMENTS**

Submit initial report, supporting documents and assessment of stipulated penalties, if any, within 30 days of the incident to the EPA Regional Office and Northwest Clean Air Agency.

If at the time the first report is submitted (within 30 days of the incident), corrective actions have not been determined a follow-up report is required within 45 days of first report (unless otherwise approved by the EPA). Provide anticipated date of follow-up report.

Stipulated penalties do not apply to Hydrocarbon Flaring Incidences.

Prepared By: \_\_\_\_\_ Tim Figgie \_\_\_\_\_ Date: \_\_\_ May 6, 2010 \_\_\_